

WHAT IS CLAIMED:

1. A system for enabling the capture of embolic material which may be released into a blood vessel during a therapeutic interventional procedure at a site of a stenosis, comprising:

5 a guide wire, including a distal end, adapted to be positioned within the blood vessel and to extend to a position distal to an interventional procedure site; and

10 a filter device, adapted to be positioned and deployed at a location in the patient's vasculature distal to the interventional procedure site, and to capture embolic material which may be released into the blood in the blood vessel during the interventional procedure, including a compressing element, for compressing the filter device so as to enable the filter device to be inserted over the guide wire, to the position distal to the interventional procedure site, in a low profile for crossing the stenosis, and without a sheath extending about the filter device, adapted to enable release thereof so as to enable expansion of the filter device for deployment thereof.

2. The system of claim 1, wherein the compressing element comprises an engageable element in the filter device, adapted to enable engagement therewith so as to compress the filter device, and an engaging element, adapted to enable engagement thereof with the engageable element so as to compress the filter device, and to enable release thereof from engagement with the engageable element for enabling expansion of the filter device and deployment thereof.

3. The system of claim 1, further comprising a delivery enabling element, adapted to bear against the compressed filter device for enabling delivery thereof to the position distal to the interventional procedure site, without extending

about the filter device, and adapted to be withdrawn from bearing against the filter
5 device for enabling release of the compressed filter device for expansion and
deployment thereof at the position distal to the interventional procedure site.

4. The system of claim 1, wherein the guide wire includes a stop
member, adapted to be secured to the distal end of the guide wire and within the filter
device, for enabling the compressing element to bear against the stop member for
enabling release of the compressing element for expansion and deployment of the filter
5 device.

5. The system of claim 2, wherein the engageable element comprises
at least one tab member, projecting from the outer surface of the filter device inwardly
therefrom.

6. The system of claim 2, wherein the filter device includes a
normally-compressed member, adapted to be expanded, and to be retained in expanded
condition by the compressing element for compression of the filter device, and wherein
the normally-compressed member is biased to compress upon release of the
5 compressing element, to release the compressed filter device for expansion and
deployment of the filter device.

7. The system of claim 3, wherein the delivery enabling element
includes an inner tube, adapted to extend about the guide wire, and including a distal
end which is adapted to be extendable into the filter device so as to bear against the

compressing element, and an outer tube, extendable about the inner tube, adapted to
5 bear against the proximal end of the filter device for delivery thereof.

8. The system of claim 5, wherein the engageable element comprises a restraining ring, including at least one slot therein opening in the distal direction for receiving the tab member therein.

9. The system of claim 5, wherein the engaging element comprises an inner tube, adapted to extend about the guide wire, and including a distal end which is adapted to be extendable into the filter device, and which includes at least one slot therein opening in the distal direction for receiving the tab member therein.

10. The system of claim 5, wherein the at least one tab member comprises a plurality of tab members, located at positions equally spaced apart in the filter device.

11. The system of claim 6, wherein the filter device includes an engaging member, adapted to engage the engageable element, and to be releaseable therefrom responsive to engagement of the engaging element with the engageable element.

12. The system of claim 6, wherein the normally-compressed member comprises a spring.

13. The system of claim 7, wherein the filter device includes a proximal end, which includes a proximal bushing, having a channel therein for enabling the inner tube to extend therethrough.

14. The system of claim 10, wherein the engaging element includes a plurality of slots therein, opening in the distal direction for receiving the plurality of tab members therein.

15. The system of claim 11, wherein the engageable element includes a distal section, adapted to be secured to the guide wire, and a proximal section, adapted to be engaged by the engaging member, and to be movable relative to the distal section so as to release the engaging member of the filter device from engagement with
5 the engageable element.

16. The system of claim 11, wherein the engaging member comprises at least one strut, which includes a proximal tip portion adapted to extend radially inwardly towards the guide wire.

17. The system of claim 11, wherein the filter device includes a proximal portion, and the engaging member is adapted to extend in the proximal direction from the proximal portion of the filter device.

18. The system of claim 13, wherein the proximal end of the filter device further includes at least one tab, adapted to extend in the distal direction and to be pre-bent so as to be biased to extend radially towards the guide wire, and to enable the inner tube to extend therethrough and to push the tab radially outwardly upon
5 extending therethrough.

19. The system of claim 15, wherein the proximal section of the engageable element includes a portion extendable in the distal direction, adapted to guide the engaging member of the filter device therealong upon movement of the proximal section relative to the distal section until the engaging member releases from
5 engagement with the engageable element.

20. The system of claim 15, wherein the engaging element comprises a balloon catheter.

21. A method of enabling the capture of embolic material which may be released into a blood vessel during a therapeutic interventional procedure at a site of a stenosis, in a system which comprises a guide wire, including a distal end, adapted to be positioned within the blood vessel and to extend to a position distal to an
5 interventional procedure site, and a filter device, adapted to be positioned and deployed at a location in the patient's vasculature distal to the interventional procedure site, and to capture embolic material which may be released into the blood in the blood vessel during the interventional procedure, including a compressing element, for compressing the filter device so as to enable the filter device to be inserted over the guide wire, to
10 the position distal to the interventional procedure site, in a low profile for crossing the stenosis, and without a sheath extending about the filter device, adapted to enable

release thereof so as to enable expansion of the filter device for deployment thereof, wherein the method comprises:

- compressing the filter device, comprising engaging the
15 compressing element with the filter device;
engaging the compressed filter device with the distal end of the
guide wire;
delivering the compressed filter device engaged with the guide
wire in a low profile for crossing the stenosis and without a sheath extending
20 thereabout, to the location in the patient's vasculature distal to the interventional
procedure site; and
releasing the compressing element so as to release the filter device
from compression thereof, for expansion and deployment of the filter device.

22. The method of claim 21, wherein the compressing element
comprises an engageable element in the filter device, adapted to enable engagement
therewith so as to compress the filter device, and an engaging element, adapted to
enable engagement thereof with the engageable element so as to compress the filter
5 device, and to enable release thereof from engagement with the engageable element for
enabling expansion of the filter device and deployment thereof, wherein compressing
comprises engaging the engageable element with the filter device, and releasing
comprises releasing the engaging element from engagement with the engageable
element.

23. The method of claim 21, further comprising a delivery element,
adapted to bear against the compressed filter device for enabling delivery thereof to the
position distal to the interventional procedure site, without extending about the filter
device, and adapted to be withdrawn from bearing against the filter device for enabling

- 5 release of the compressed filter device for expansion and deployment thereof at the position distal to the interventional procedure site, and wherein delivering comprises the delivery element bearing against the filter device, and releasing comprises withdrawing the delivering element from bearing against the filter device.

24. The method of claim 21, wherein the guide wire includes a stop member, adapted to be secured to the distal end of the guide wire, and within the filter device, for enabling the compressing element to bear against the stop member for enabling release of the compressing element for expansion and deployment of the filter
5 device, and wherein releasing comprises bearing the compressing element against the stop member.

25. The method of claim 22, wherein the engageable element comprises at least one tab member, projecting from the outer surface of the filter device inwardly therefrom, and wherein compressing further comprises engaging the engaging element with the tab member of the engageable element.

26. The method of claim 22, wherein the filter device includes a normally-compressed member, adapted to be expanded, and to be retained in expanded condition by the compressing element for compression of the filter device, and wherein the normally-compressed member is biased to compress upon release of the
5 compressing element, to release the compressed filter device for expansion and deployment of the filter device, and wherein compressing comprises expanding the normally-compressed member and retaining the normally-compressed member in expanded condition, and releasing comprises releasing the normally-compressed member for enabling compression thereof.